REMARKS

Applicants respectfully request entry of amendments to claims 1, 22, 27-29, and 36-38. Support for the amendments can be found throughout the specification, including paragraphs [0009], [0012], [0020], [0060], [0065], [0067], [0068], [0072], [0076], [0078], [0099], [0130], [0134], [0152]; Example 8; and the originally filed claims and, therefore, do not add new matter.

Applicants submit that pending claims 1, 9-13, 15, 16, 22-32, and 34-38 are in condition for allowance, or are in better condition for presentation on appeal, and respectfully request that the claims as amended be entered.

Rejections Under 35 U.S.C. §112, First Paragraph

Claims 1, 9-13, 15, 16, 22-32, and 34-38 stand rejected under 35 U.S.C. §112, first paragraph, as allegedly lacking written description support.

Applicants traverse the rejection as it might apply to the amended claims, including claims dependent therefrom, for the reasons given below.

The Office Action alleges, in pertinent part, that the specification does not disclose "adhesion to a defined substrate lacking a feeder layer." While not acquiescing to the reasoning offered in the response, in order to expedite prosecution toward allowance, the claims have been amended to recite that "the EBD cell will adhere to defined extracellular matrix components." The Action specifically recites that the claims have written description support for this phrase (p. 2, last sentence).

For these reasons, Applicants respectfully request that the rejection be withdrawn.

Claims 1, 9-13, 15, 6[sic], 22-32, and 34-38 stand rejected under 35 U.S.C. §112, first paragraph, as allegedly lacking enablement. We assume the Action was referring to claim "16" and not claim "6" as recited.

Applicants traverse the rejection as it might apply to the amended claims, including claims dependent therefrom, for the reasons given below.

The Office Action alleges, in pertinent part, that the specification "does not enable a use for EBD cells lacking telomerase activity that is senescent cells. The uses disclosed in the

specification each require the cells to actively divide. Senescent cells are not going to be useful for cell culture, tissue transplantation, tissue engineering, drug discovery or gene therapy. A senescent cell has quit dividing. Each disclosed use requires that the cells divide." Applicants respectfully submit that the position in the Action is incorrect because the claims never recited senescent cells. Nevertheless, for the sake of clarity, the claims have been amended to recite "lacking detectable telomerase activity."

Again, as stated in Engel Industries, Inc. v. Lockformer Co., 20 U.S.P.Q.2d 1300 (Fed. Cir. 1991), "[t]he enablement requirement is met if any description enables any mode of making and using the claimed invention." Applicants submit that cells which lack detectable telomerase activity can be used for transplantation. In support of this position Applicants refer to previously offered Exhibit B: Ostenfeld et al., Human Neural Precursor Cells Express Low Levels of Telomerase in Vitro and Show Diminishing Cell Proliferation with Extensive Axonal Outgrowth following Transplantation. Experimental Neurology (2000) 164(1):215-226. The Abstract clearly shows that a) human neural precursor cells express very low levels of telomerase at early passage, that decreases to undetectable levels at later passages; b) these cell when implanted, fiber outgrowth continued, even though there were no dividing cells in the graft; and c) for Parkinson's disease, because such cells afford a good safety profile, they "may provide the ideal basis for the repair of other lesions of the CNS where extensive axonal outgrowth is required."

Again, as stated in the previous response:

> "**[0180]** "To determine the proliferative capacity of EBD cultures, LVEC, SLEC, LU2EC and SDEC were continuously passaged. After approximately 70-80 PD, these cultures failed to divide. Continuous passage of cultures in environments less favorable to proliferation has not been carried out; however, most EBD cultures are capable of at least 40 PD. To determine whether the proliferation of EBD cultures may be limited by the absence of telomerase, telomeric repeat amplification protocol assays were performed on LVEC and SDEC cultures that had undergone approximately 20 PD after EBD cell establishment. Telomerase assays were performed by using a telomeric repeat amplification protocol followed by ELISA detection of amplified products (TeloTAGGG PCR

> ELISA PLUS3, Roche). **No telomerase activity was detected in either culture**, consistent with the hypothesis that cell division in the absence of telomerase activity leads to cellular senescence." (p. 66 bridging to p. 67) (emphasis added)

Further, the specification explicitly states:

> **[0007]** "The invention is directed to novel cells that are derived from human embryoid bodies (EBs), which are in turn produced by culturing EG cells. Such embryoid body derived (EBD) cells and cell lines are relatively uncommitted or progenitor cells. EBD cells, while not immortal, display robust and long-term proliferation in culture with a normal karyotype and can be cryopreserved and cloned. They can be efficiently transfected with retroviruses and lentivirus, for example, and can be genetically manipulated. Although EBD cells have a developmentally broad multilineage expression profile and do not form tumors (*e.g.*, differentiated embryonic tumors or teratomas) when injected *in vivo*, such as into severe combined immunodeficiency (SCID) mice. As a result, EBD cells have a variety of uses, for example, in **transplantation therapies** for the **treatment of such diseases as Parkinson's disease**, amyotrophic lateral sclerosis (ALS), stroke, injury to motor neurons, including spinal cord injury, and diabetes." (p. 2 bridging to page 3) (emphasis added).

Therefore, because a) transplantation therapies for the treatment of such diseases as Parkinson's disease is expressly recited in the specification as filed; b) the art recognizes the use of cells lacking detectable telomerase activity in transplantation therapies for the treatment of Parkinson's disease; and c) the specification enables a mode of making and using the claimed invention (e.g., EBD cells lacking detectable telomerase activity), the claims are enabled. Thus, the specification provides appropriate guidance and working examples such that one of skill in the art could practice the invention as claimed, in the absence of undue experimentation. Again, that is all that is required.

For these reasons, Applicants respectfully request that the rejection, including as it may be applied to the amended claims, be withdrawn.

Conclusion

Applicants submit that pending claims 1, 9-13, 15, 16, 22-32, and 34-38 are in condition for allowance, or are in better condition for appeal. The Examiner is invited to contact Applicants' undersigned representative if there are any questions relating to this submission.

The Commissioner is hereby authorized to charge $810.00 as payment for the Request for Continued Examination to Deposit Account No. 07-1896. Additionally, the Commissioner is hereby authorized to charge any additional fees required by this submission, or credit any overpayments, to Deposit Account No. 07-1896 referencing the above-identified docket number.

Respectfully submitted,

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